

C. Vertical and Horizontal Control

A summary of the horizontal and vertical control for survey H13388 follows.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

ERS Datum Transformation

The following ellipsoid-to-chart vertical datum transformation was used:

Method	Ellipsoid to Chart Datum Separation File
ERS via VDATUM	OPR-K375-KR-20_VDatum_NAD83-MLLW_Geoid18.csar OPR-K375-KR-20_VDatum_NAD83-MHW_Geoid18.csar

Table 12: ERS method and SEP file

The MLLW version of the separation file was used to reduce all sounding data to the MLLW chart datum for the survey area. The MHW version of the file was used to transform all mobile laser data to mean high water, the high-water chart datum for the survey area. Both files were provided by the HSD for use on this survey project.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD 83).

The projection used for this project is Universal Transverse Mercator (UTM) Zone 15.

The following PPK methods were used for horizontal control:

- Smart Base

An RTK-corrected real-time navigation solution was used during processing of multibeam data unless data quality or correction reception issues impacted the accuracy of the position or height data. This determination was made by reviewing acquisition logs for loss of RTK corrections or operating outside of fixed ambiguity mode as noted by the field party or logged by the HYPACK acquisition system, observing inconsistent global positioning system (GPS) heights when reviewing data in the CARIS HIPS Attitude Editor, or the presence of significant GPS tides artifacts in bathymetric surfaces. When issues with the real-time navigation solutions were identified in a survey line, all survey lines acquired by the survey vessel on the day in question were post-processed using post-processed kinematic (PPK) methods. The post-processing methodology and software used was determined by the navigation system on each survey vessel. Applanix POSpac MMS was used to post-process navigation solutions for survey vessels S/V Blake, R/

V Broughton, and R/V Sea Scanner, which used POS MV OceanMaster GNSS inertial reference systems. NovAtel GrafNav software was used to post-process navigation data from the RHIB Sigsbee, which used a Trimble GNSS receiver integrated with an iXBlue Hydrins. Texas Department of Transportation (TxDOT) Real Time Network (RTN) base station data and published NAD83 (2011) base station positions were used during post-processing. See Section C.4 of the DAPR for additional discussion on post-processed positioning. The following days for survey H13388 have post-processed solutions applied: S/V Blake: October 1, 2020 (DN275), October 3, 2020 (DN277); R/V Broughton: March 13, 2021 (DN072); R/V Sea Scanner: November 14, 2020 (DN319), December 5, 2020 (DN340), December 7, 2020 (DN342), December 10, 2020 (DN345); RHIB Sigsbee: October 11, 2020 (DN285), October 12, 2020 (DN286).

RTK

During acquisition, RTK correctors were obtained from the TxDOT RTN via a dedicated cellular modem. These correctors provided RTK level of accuracy for horizontal and vertical positions for all survey data. When issues with the real-time navigation solutions were identified in a survey line, all survey lines acquired by the survey vessel on the day in question were post-processed. Additional discussion of the TxDOT network, including quality control checks and acquisition and processing procedures, is discussed in the DAPR.